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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/025,756      | 12/26/2001  | Gang Xie             | 217646US3           | 1666             |

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EXAMINER

MARTIN, ANGELA J

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1745

DATE MAILED: 02/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/025,756

Applicant(s)

XIE, GANG

Examiner

Angela J. Martin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 November 2004.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-15 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/3/04.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on November 3, 2004 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 6, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nezu et al., U.S. Pat. No. 5,994,426, in view of Okuyama, JP 07050170 A.

Rejection of claim 1 and 11 drawn to a solid polymer electrolyte membrane; claim 6 and 12 drawn to a method for producing a solid electrolyte membrane.

Nezu et al., teach a solid polymer electrolyte membrane (abstract) with ion exchangeability employed in a solid polymer electrolyte fuel cell, wherein an anion

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group is partially combined with the solid polymer membrane (col. 14, lines 49-67 and col. 15, lines 1-20). It teaches the membrane includes sulfonated regions and non-sulfonated regions (col. 3, lines 26-46; chemical formulas 2 and 4). It also teaches a method for producing the membrane wherein the anion group includes a sulfonic acid group and non-sulfonated regions (col. 4, lines 56-63; chemical formulas 2 and 4).

Nezu et al., do not teach the solid polymer membrane over a part of the surface of the membrane, which part is less than an entire surface of the membrane.

Okuyama teach the solid polymer membrane over a part of the surface of the membrane, which part is less than an entire surface of the membrane (abstract).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the teachings of Okuyama into the teachings of Nezu et al., because the structure of partial coverage of the membrane provides a fuel cell "having excellent output performance at a low cost" (abstract).

4. Claims 2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nezu et al., U.S. Pat. No. 5,994,426, in view of Okuyama, JP 07050170 A.

Rejection of claims 2 and 7 drawn to a method for producing a solid electrolyte membrane.

Nezu et al., teach a method for producing a solid electrolyte membrane with ion exchangeability employed in a solid polymer electrolyte fuel cell comprising the step of partially combining an anion group with the membrane (col. 14, lines 49-67 and col. 15, lines 1-20). It also teaches the anion group includes a sulfonic acid group (col. 4, lines 56-63).

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Nezu et al., do not teach the method for producing a solid polymer membrane over a part of the surface of the membrane, which part is less than an entire surface of the membrane.

Okuyama teach the solid polymer membrane over a part of the surface of the membrane, which part is less than an entire surface of the membrane (abstract).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the teachings of Okuyama into the teachings of Nezu et al., because the structure of partial coverage of the membrane provides a fuel cell “having excellent output performance at a low cost” (abstract).

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 3-5, 8-10, 13-15 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nezu et al., U.S. Pat. No. 5,994,426.

Rejection of claims 3-5, 8-10, 13-15 drawn to a method for producing a solid electrolyte membrane.

Nezu et al., teach a method for producing a solid electrolyte membrane comprising the steps of covering a predetermined portion on a surface of a polymer substrate with a first mask to shield the predetermined portion; applying radiation to an entirety of the substrate; grafting a styrene onto a polymer in a remaining portion in the substrate not covered by the first mask; removing the first mask from substrate; and combining an anion group with the styrene on the polymer in the grafted remaining portion of the substrate (col. 4, lines 64-67 and col. 5, lines 1-8). It also teaches a method comprising the steps of applying radiation to a surface of a substrate; covering a predetermined portion in the radiated surface of the polymer substrate with a mask to shield the predetermined portion; grafting a styrene onto a polymer in a remaining portion of the substrate not covered with the mask; and combining an anion group with the styrene on the polymer in the grafted remaining portion of the substrate (col. 4, lines 41-55). It also teaches a method comprising the steps of applying radiation to substrate; covering predetermined portion of radiated surface with a mask; grafting styrene onto polymer not covered with mask; removing mask; and combining anion group with styrene on polymer of a surface portion of the predetermined portion in the thickness direction (col. 4, lines 41-63). For the above methods the anion group includes a sulfonic acid group (col. 4, lines 56-63). It also teaches the mask is formed of polytetrafluoroethylene (col. 3, lines 55-61).

Thus, the claims are anticipated.

However, if the claims are not anticipated, in the alternative, they are obvious because Nezu et al., teaches the same method, although he is silent on "predetermined

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portion." The skilled artisan, through routine optimization, would cover a predetermined portion on a surface of a polymer substrate, in order to replicate optimum results in the method for producing a solid electrolyte membrane.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela J. Martin whose telephone number is 571-272-1288. The examiner can normally be reached on Monday-Friday from 9:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



AJM